

Expert report of Stephen McKeon, Ph.D.

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Securities and Exchange Commission v. Telegram Group Inc. and TON Issuer Inc

116. TON Labs is developing various other toolkits to allow developers to debug and test smart contracts in a controlled environment, and connect apps to TON using an open standard. Additionally, TON Labs provides documentation related to the development and implementation of smart contracts on the TON Blockchain. Finally, in April 2019, TON Labs announced a partnership with external vendor Wirecard to develop a joint digital financial services, payments and banking platform.³⁷ These efforts by TON Labs are designed to facilitate broad participation by third party developers in the TON open source ecosystem.

117. Further evidence of third-party developer activity on TON is found in a blog post, dated September 24, 2019 by token.store, a developer of decentralized exchanges: *“This will be the sixth blockchain ecosystem token.store has built on top of. We have never seen a developer community grow as quickly as TON’s. We have never seen such an amount of high quality developer tools developed in such a short period of time.”*³⁸

118. In summary, the open source nature of the TON blockchain protocol, as well as the ability, and evidence of, third-party developers to produce competitive applications and services suggests that Telegram is one of many participants in the system, as opposed to an essential manager.

C. Ecosystem Foundations and Open Source Development

119. Ecosystem Foundations, or organizations that fill similar roles, are a common component in several leading smart contract platforms similar to TON such as Ethereum, EOS,

³⁷ See: <https://www.wirecard.com/company/press-releases/wirecard-and-telegram-open-network-infrastructure-developer-ton-labs-enter-partnership>

³⁸ See: <https://medium.com/token-store/thoughts-on-telegram-open-network-ton-teams-timing-traction-economics-uncertainties-eca6396b1549>

and Stellar. These foundations often contribute to open source development by funding projects by third party developers and/or contributing to core protocol development.

120. In the case of TON, approximately 28% of the total initial supply of Grams will be held in TON Reserve. If the TON Foundation is launched, its role is described as being limited to the following three activities: (1) selling Grams through the TON Reserve; (2) awarding Grams from the Incentives Pool; and (3) publishing non-binding opinions and research results regarding the TON Blockchain's development and policy³⁹.

121. Neither the TON Reserves nor the incentive pool will be staked for validation purposes, meaning they will not participate in the primary operation of the network. I provide analysis of foundations at comparable projects below.

1. EOS/Block.one

122. The EOS blockchain does not have a foundation, but the issuer, Block.one fills a similar role. Block.one is estimated to hold approximately \$240 million of EOS as of December 4, 2019. In contrast to the TON Foundation, Block.one recently announced it plans to take an active role in the validation process by participating in block producer voting.⁴⁰

123. EOS has run several hackathons in recent years, similar to TON Contests described in the previously section.⁴¹ Additionally, the model for funding development employed by Block.one is different from the grant model of the TON Foundation and the Ethereum Foundation, in that Block.one follows a venture capital model in addition to grants. Block.one's \$1 billion venture fund, EOS VC, is actively investing in companies that are developing dApps on the

³⁹ Telegram Group Inc. Fourth Supplemental Memorandum to the Staff of the SEC (July 25, 2019).

⁴⁰ See: <https://block.one/news/blockone-to-begin-voting-for-eos-public-blockchain-upgrades/>

⁴¹ See: <https://hackathon.eos.io/>

network.⁴² By disbursing capital in the form of investments rather than grants, EOS VC may be in a position to exert controlling and managerial direction in these projects. As of the time of this writing, Block.one has invested in a total of 24 companies.⁴³

124. In addition to funding development activities, Block.one appears to remain heavily involved in core protocol development for EOS. All the blog posts on the EOS website appear to be written by Block.one representatives. The top committer on the EOS repository works for a software consultancy who lists Block.one as a client, and many of the other committers appear to be located in Arlington, VA, which is one of Block.one's major offices. Notably, EOS does not have a formal merging policy for code submitted to the main repository, which is the process by which proposals for improvements to the core protocol are integrated, so I can only assume that Block.one employees maintain full powers relating to which requests to merge and which to reject.

125. Aside from core protocol development, it is not unusual for the original developer of a base layer protocol to subsequently join other third-party participants in developing additional applications on top of the protocol. For example, Block.one is developing an application called "Voice" on the EOS blockchain, which is a decentralized social media application.⁴⁴

2. Stellar

126. Stellar is a blockchain and smart contract platform similar to TON. The Stellar Development Foundation ("SDF") issues grants in the form of Stellar tokens to encourage development. Grants can be awarded for general purpose projects designed to incentivize activity on Stellar, or for academic research that is in line with the SDF's goals.

⁴² See: <https://vc.eos.io/funding/>

⁴³ See: <https://vc.eos.io/companies/>

⁴⁴ See: <https://block.one/news/block-one-introduces-social-media-application-voice/>

127. The SDF controls a significant number of Stellar tokens, which they use to fund various initiatives. Specifically, using December 4, 2019 prices, the fund has nearly \$655 million in an operating budget designated for hiring engineers and general development. \$109 million is budgeted for ecosystem support, with half allocated to infrastructural grants and the remaining half to be used to provide currency support by creating token tethers and ensuring token liquidity. \$546 million is dedicated towards connecting Stellar to various use cases, such as Stellar wallets. 20% of this is to be given away in the form of grants, and the remaining 80% of the use case funds are to be used to invest in or acquire business. The remaining \$327 million is split between marketing and airdrops of Stellar designed to encourage usage. The SDF is a 501(c)(3) nonprofit registered in Delaware, so any investments gains roll back into the general fund.

128. The SDF appears to be the primary actor in terms of engineering, marketing, and outreach. Decisions on changes to core functionality must be unanimously approved by a core team, composed entirely of SDF employees. Changes to non-core functionality is less restrictive in that unanimity is not required, but in some cases, approvals require approvals directly from at least two SDF employees.

3. Ethereum

129. The history, foundation, and planned development of Ethereum is examined in detail in Appendix C and summarized here. The foundation sees its role in the ecosystem as serving three functions:

- a. Resource allocation. The foundation holds 0.6% of all ether (approximately \$90 million as of December 2019) and applies those funds towards development of the platform.

- b. Leadership. The Ethereum Foundation can guide development, encourage community growth, and highlight projects that are important to Ethereum's core processing.
- c. Representation. The foundation serves as a way to begin working with Ethereum for those who may be interested in the platform and serves as a single representative in a way that a mass of developers would not ordinarily be able to.

130. The foundation's stated goals are to essentially remove themselves from the equation by fostering community growth until Ethereum can stand alone. In this sense it is similar to the stated goals of TON.⁴⁵

131. The foundation provides an "ecosystem support program", which helps grant recipients refine their budgets, and connects them to other applicants to ensure more successful deployment of grant funding.

132. The Ethereum Foundation plans to spend \$30 million between 2019-2020 on projects, including technical improvements, supporting core features, improving developer education, community gatherings, and website development. In terms of legal structure, the Ethereum Foundation is a Swiss non-profit called Stiftung Ethereum.

133. At present, Ethereum is working on a transition to PoS consensus algorithm, similar to the design of the TON blockchain, which is referred to as "ETH 2.0." I understand there are ten teams working on the development of Ethereum 2.0. Out of the ten teams, eight are being funded by the Ethereum Foundation and/or related parties, such as Ethereum founder Vitalik Buterin. Furthermore, from a total of \$9.5 million in disclosed funding, \$9.0 million is being provided by the Ethereum Foundation and/or related parties.⁴⁶

⁴⁵ 2018 Stage A Primer (TG-003-00000056), p. 20.

⁴⁶ See: <https://docs.ethhub.io/ethereum-roadmap/ethereum-2.0/eth2.0-teams/teams-building-eth2.0/>

134. The evidence on comparable blockchains indicates that it is not uncommon for issuers and ecosystem foundations to remain involved in core protocol development and funding for external developers. However, the development community for open source public blockchains is often much larger than any single organization. As of June 2019, Electric Capital reports 6,842 active open source blockchain developers, with over 1,200 on Ethereum alone.⁴⁷ In summary, the open source nature of the TON blockchain protocol, as well as the ability of third-party developers to produce competitive applications and services, suggests that Telegram is one of many participants in the system, as opposed to an essential manager.

IX. ECONOMIC USES FOR GRAMS

135. Cryptocurrency users are typically motivated by one of two reasons, which may not be mutually exclusive. The first is profit, typically through price appreciation, and the second is consumptive utility value, which can take many forms. Determinants of price appreciation are examined in Section XI, while this section analyzes consumptive uses for Grams.

136. Consumptive uses fall into two categories: goods and services provisioned within the network, and those that are external to the network. I begin with an analysis of internal economic uses of Grams as the TON's native cryptoasset.

137. As of the time of the launch of TON platform, it is anticipated that Grams will immediately be useable within the platform for:

- a. Paying for the processing of smart contracts and applications that are developed on the TON Blockchain by third parties as part of TON Services;

⁴⁷ See: https://www.electriccapital.com/developer_report_H1_2019_pdf